

Isolated Analog Signal Converter Pt 100 AC-PT100-420

The AC-PT100-420 (VW-ST-TR1P1) is an industrial DIN-rail temperature transmitter engineered to convert Pt100 RTD sensor inputs into an isolated standard analog signal (4–20mA, 0–20mA, or 0–10V DC). Built with advanced 3-way galvanic isolation (1,500V AC between input, output, and power supply), it effectively eliminates ground loops, suppresses common-mode electrical noise, and protects downstream PLCs, DCS controllers, and SCADA data acquisition hardware in electrically harsh plant environments. It supports both 2-wire and 3-wire RTD configurations with automatic lead resistance compensation, customizable temperature ranges across –200 °C to +850 °C, and high Class 0.2% measurement accuracy.



Key Features

- 3-way 1.5 kV AC galvanic isolation (input, output, and power)
- 2-wire and 3-wire Pt100 RTD temperature sensor input
- Automatic lead-wire resistance compensation
- Factory customizable temperature spans across –200 °C to +850 °C
- 4–20mA active current loop output driving loads up to 500 Ω
- Fast response time (≤ 10 ms) for closed-loop temperature control
- Sensor open-circuit burnout alarm indicator (ALM)
- 24V DC industrial power supply input
- Slim 25 mm DIN rail mountable housing
- Dimensions: 110 mm × 47 mm × 25 mm

Ordering Information

Product Code	Description
AC-PT100-420	Isolated Analog Signal Converter Pt 100 (4–20mA, 24V DC, 3-Way Isolated)
AC-PT1000-420	Isolated Analog Signal Converter Pt 1000 (4–20mA, 24V DC, 3-Way Isolated)
AC-RES-420	Isolated Resistance Signal Converter 0–5k Ω to 4–20mA
AC-TCK-420	Isolated Thermocouple Converter K-Type to 4–20mA
AC-TCJ-420	Isolated Thermocouple Converter J-Type to 4–20mA
SPD-20MA	4–20mA Surge Protection Device
USS20M24V-D	Current Source Simulator 0/4 to 20mA with Display

Applications

- **Process Temperature Control:** Measuring reactor, boiler, and distillation column temperatures in chemical and petrochemical facilities.
- **HVAC & Building Automation:** Chilled water, air handling units (AHU), and cleanroom environmental monitoring.
- **Food & Pharmaceutical Processing:** Cleanroom sanitary temperature monitoring and CIP pasteurization tracking.
- **Rotating Machinery & Bearings:** Real-time motor stator winding, bearing, and lubrication oil temperature measurement.
- **Power Generation & Sub-stations:** High-voltage electrical switchgear temperature monitoring with ground loop immunity.

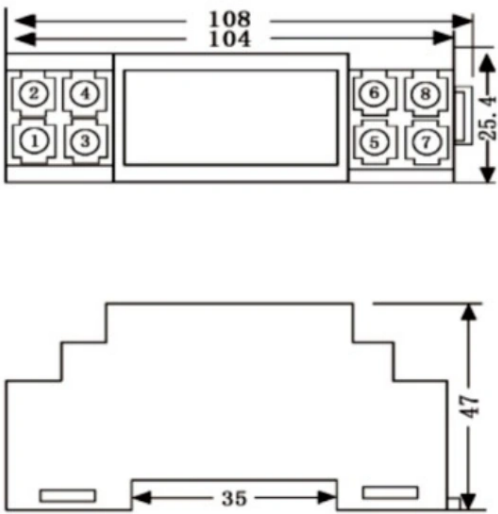
Specifications

Parameter	Value
Mounting Type	35 mm DIN Rail Mounting
Dimensions	110 mm x 47 mm x 25 mm (L x H x W)
Weight	100 g
Enclosure Material	Industrial Grade ABS
Operating Temperature	−20 °C to +55 °C
Storage Temperature	−40 °C to +85 °C
Relative Humidity	5% to 95% RH (non-condensing)

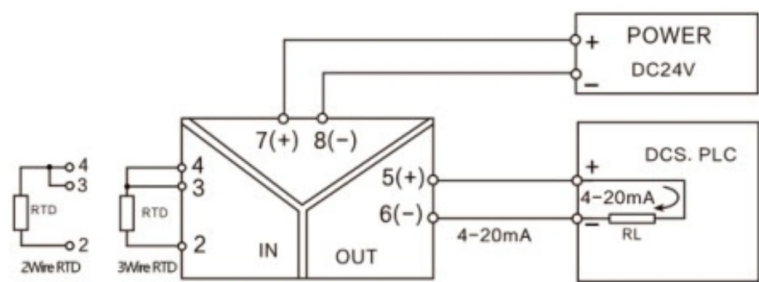
Electrical Specifications

Parameter	Specification
Power Supply Voltage	24V DC $\pm 10\%$
Operating Current	100 mA @ 24V DC
Sensor Input Type	Pt100 RTD (2-wire or 3-wire)
Temperature Range	Customizable from $-200\text{ }^{\circ}\text{C}$ to $+850\text{ }^{\circ}\text{C}$
Measurement Accuracy	$1\text{ }^{\circ}\text{C}$ (Class 0.2% of Full Scale @ $25\text{ }^{\circ}\text{C}$)
Output Signal Range	4.00 mA to 20.00 mA (or 0–20 mA / 0–10V DC on request)
Maximum Output Load Resistance	$R_L \leq 500\ \Omega$
Response Time	$\leq 10\text{ ms}$ (0–90% TYP)
Galvanic Isolation Barrier	1,500 V AC / 1 min (3-Way: Input / Output / Power Supply)
Status Indicators	PWR LED (Power ON), ALM LED (Sensor Fault / Disconnect)
Reverse Polarity Protection	Integrated diode on 24V DC input

Mechanical Dimensions



Terminal Details & Wiring



Connection Pinouts

Terminal Block	Pin	Label	Signal	Description
Input Terminals	1	SLD	Shield	Cable shield connection (Earth ground)
<i>(Top Block)</i>	2	IN 2	RTD Return (-)	Pt100 sensor common return lead
	3	IN 3	RTD Excitation (+)	Pt100 positive excitation lead
	4	IN 4	RTD Sense (+)	Pt100 sense lead (lead resistance compensation)
Output Terminals	5	OUT +	Signal Out (+)	Active 4–20mA Analog Output (+)
<i>(Bottom Block)</i>	6	OUT -	Signal Out (-)	Analog Signal Ground / Current Return (-)
Power Terminals	7	PWR +	24V DC (+)	+24V DC Operating Power Supply
<i>(Bottom Block)</i>	8	PWR -	0V DC (-)	Power Supply Ground Return

Sensor Wiring Configuration

- **3-Wire Pt100 Connection:** Connect the single common lead of the RTD to terminal 2. Connect the two paired excitation and sense leads to terminals 3 and 4. This configuration cancels out lead-wire resistance over long cable distances.
- **2-Wire Pt100 Connection:** Connect one RTD wire to terminal 2. Connect the second RTD wire to terminal 3, and install a short jumper wire between terminals 3 and 4.

LED Indications and Diagnostics

LED	Color	Status	Description
PWR	Green	ON	Normal 24V DC operating power connected
ALM	Red	OFF	Normal operation; sensor input within valid range
ALM	Red	ON	Sensor open-circuit, broken wire, or burnout detected

Revision History

Revision	Date	Description of Change
Rev 1.0	2026-09-09	Initial datasheet release

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Support

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